Unload Function

You use the Unload function to unload source code objects. The Unload function performs the following:

- unloads data for any operating system;
- if requested, converts the data from ASCII to EBCDIC or from EBCDIC to ASCII;
- formats the objects to be unloaded according to the general record layout.

Below is information on:

General Unload Options

When you invoke the Unload function, you first have to specify the General Unload Options before you can select the objects to be unloaded.

To specify any of the General Unload Options

- In CUI environments:
  Enter a Y (Yes) or an N (No).
- In GUI environments:
  Select the corresponding option.
  Or choose a button.

You can specify the following:

Option	Explanation
Conversion EBCDIC ===> ASCII ASCII ===> EBCDIC	Conversion from EBCDIC to ASCII or from ASCII to EBCDIC is performed, depending on your hardware environment.
User-Defined Conversion Table	Applies if the above Conversion option is selected. If you have specified your own conversion table in the program SULCONV, all data are converted using this conversion table. If the User-Defined Conversion Table option is not selected, all data are converted using a conversion table that is internally defined. See also User-Defined Conversion Table below for more information on defining your own conversion table in the program SULCONV.
Substitute Line References	If line numbers are used as references in the source code, the line numbers of the referenced lines and the line number references are replaced with labels. The sources are not modified in the database.
Report	A report is displayed listing the objects that were unloaded.
Include Line Numbers	By default, line numbers in Natural objects are not transferred. Select this option if you wish to transfer line numbers, too.
Use Work File Input	Input for the Unload function is taken from a work file; see also the section Work File for Unload Command Input (Work File 2).
Use Selection List	If this option is set, a list is displayed where you can select objects, maps, libraries or DDMs to be unloaded; see further details under Applying the Use Selection List Option.
Work File Name	**Not applicable to mainframes.** See the section Unload Work File Specifications for more information on defining work files. **OpenVMS, UNIX**: To enter a work file name longer than 35 and up to 253 characters, you must invoke the help function for the Work File Name field.
Use Entire Connection Work File	**Not applicable to Windows.** All unloaded data are copied to Work File 7 when you exit the Unload function on OpenVMS and UNIX, or directly written to Work File 7 on mainframes. Work File 7 must have been defined as Entire Connection work file in your parameter file.
Browse...	**Windows only**. A work file selection facility is invoked with a corresponding dialog box.

User-Defined Conversion Table

In the library SYSTRANS, there is the program SULCONV with which you can define your own conversion tables. In this program, you can replace any character to match your hardware environment.

Example:

The following steps are an example of how the ASCII character **A** can be converted to the EBCDIC character **a**:

1. Find out the decimal representation of the ASCII character **A**. In this case, the decimal representation of the ASCII character **A** is 65.
2. Find out the decimal representation of the EBCDIC character **a**. In this case, the decimal representation of the EBCDIC character **a** is 129.
3. Replace the value located at the 65th position of the table BASCE with 129.

Applying the Use Selection List Option

If the Use Selection List unload option is set, a list is displayed which is used to select and unload objects, maps, libraries or DDMs from the specified library.

To set the Use Selection List option

- In CUI environments:
  Enter a Y (Yes).
  The selection list is displayed after you have made all necessary specifications for the objects to be unloaded as described below.
- In GUI environments:
  Select the corresponding option.
  Click on the Select... button in the object specification dialog box to invoke the selection list.

To start the unload procedure in CUI environments

1. Either select all items by pressing PF5 (All),
   Or select a single item or multiple items by marking it (them) with any character entered in the Cmd column and then press ENTER.
2. Press PF4 (Unld).

To exit, press PF3 or enter a period (.) in the command line.

To start the unload procedure in GUI environments

1. Select all items by choosing the Select All button.
   Or select a single item by either double-clicking it,
   or clicking it once and choosing the Select button.
   Or select multiple items by marking them using the mouse or appropriate key combinations and choosing the Select button.
2. Choose the Unload button.

Choose the Options button if you want to specify any options provided to limit the number of objects displayed in the list; a corresponding dialog box is displayed (see the section Options for the Natural Objects Selection List, Options for the Map Selection List or Options for the DDM Selection List).

Objects to be Unloaded

Once you have specified the General Unload Options, a menu is displayed on which you select one of the object types below to be unloaded. In Windows environments, the Objects to be Unloaded are displayed in the right-hand section of the same menu.

- Natural Objects
- Maps
- DDMs
- Adabas FDTs
- Error Message Texts
- Command Processors
- Library

Unloading Natural Objects

If you select Natural Objects as the type of objects to be unloaded, you can make the following specifications:

S/C Type	For future use; nothing can be specified at the moment.
From Library	The name of the library where the Natural objects are located. If the Use Selection List option is set, you can invoke a selection list of all available libraries and unload them: Press PF1 (CUIs) or open a selection box (GUIs) and select the library.
Object Name	The name of the object to be unloaded See also Name and Range Specification in the section Introduction. The Object Name field does not appear in CUI environments if the Use Selection List option is set. To display a selection list of all objects contained in the specified library: Press ENTER (CUIs) or choose the "Select..." button (GUIs). See also Applying the Use Selection List Option.
Object Type	The type(s) of the object(s) to be unloaded.
To Library	The name of the library into which the objects are to be loaded. If no library is specified, the name specified as From Library is used.

Options for the Natural Objects Selection List

See also the section Applying the Use Selection List Option.

In this selection list, you can limit the number of Natural objects displayed by specifying the following:

CUIs	GUIs	Explanation
Member	Name Range	A single name or a range of names of Natural objects to be listed. See Name and Range Specification in the section Introduction. Additionally, you can use a wildcard (?) within the object name or within the asterisk (*) range.
Types	Types	The types of objects to be listed. To display a selection list of possible object types: CUIs enter a question mark (?) in this field or press PF1 (Help) GUIs choose the "Select..." button
Mode	Programming Mode	The programming mode with which an object has been created. Valid values are: S structured mode; R reporting mode; * both structured and reporting mode or no mode, as with data areas on mainframe computers.
Version		**Mainframes only.** A mask for the version of objects to be listed. All objects for which the version matches this mask are listed. If an asterisk (*) is specified as version mask, no checks are performed.
User ID	User ID Range	The ID of the user who saved the objects to be listed. If an asterisk (*) is specified as user ID, no checks are performed.
Save Date	Save Date Range	A date on which or a date range within which an object was saved. Options are: • a date (1997-06-17) • a starting date range (1997-06>). If you specify a starting date, all Natural objects saved on or after this date are listed; • an ending date range (1997-06<). If you specify an ending date, all Natural objects saved up to this date are listed; • a date mask (1997-06 or 1997-06*). If you specify a date mask, all Natural objects saved during that particular time period are listed. As abbreviations for special dates or date ranges, the following strings can be entered: **String** **Explanation** TODAY The date of the current day. The day can be followed by ***+nnnn*** or ***-nnnn*** (where *nnnn* are numeric digits) and/or by > or < . The resulting date is computed as the date of the current day plus or minus *nnnn* days. YESTERDAY The date of the day before the current day. MONTH The date range of the current month. YEAR The date range of the current year.

CUIs	GUIs	Explanation
Save Time Range	Save Time Range	A time at which or a time range within which an object was saved. Options are: ● a time (10:11:12) ● a starting time range (09>). If you specify a starting time, all Natural objects saved at or after this time are listed; ● an ending time range (17:00<). If you specify an ending time, all Natural objects saved up to this time are listed; ● a time mask (10: or 10:*). If you specify a time mask, all Natural objects during that particular time period are listed. The time must be specified in the format HH:II:SS (HH = hours, II= minutes, SS = seconds).

Unloading Maps

If you select Maps as the type of objects to be unloaded, you can make the following specifications:

S/C Type	For future use; nothing can be specified at the moment.
From Library	The name of the library where the maps are located. If the Use Selection List option is set, you can invoke a selection list of all available libraries and unload them: Press PF1 (CUIs) or open a selection box (GUIs) and select the library.
Map Name	The name of the map to be unloaded. See also Name and Range Specification in the section Introduction. The Map Name field does not appear in CUI environments if the Use Selection List option is set. To display a selection list of all maps contained in the specified library: Press ENTER (CUIs) or choose the "Select..." button (GUIs). See also Applying the Use Selection List Option.
Incorporate all Predict Rules	If you set this option and Predict is installed, all Predict rules associated with the map are incorporated into the map source.
Unload associated Free Rules	This option is currently not available.
To Library	The name of the library into which the maps are to be loaded. If no library is specified, the name specified as From Library is used.

Options for the Map Selection List

In this selection list, you can limit the number of maps displayed. Here, the same applies as for the Options for the Natural Objects Selection List with the exception of the Types field which cannot be changed.

Unloading DDMs

If you select DDMs as the type of objects to be unloaded, you can make the following specifications:

S/C Type	**GUIs only.** For future use; nothing can be specified at the moment.
DDM Name	The name of the DDM to be unloaded. See also Name and Range Specification in the section Introduction. If the Use Selection List option is set, you can invoke a selection list with all DDMs contained in the specified library (OpenVMS, UNIX and Windows) or in the FDIC system file (mainframes): Specify any range as DDM name and press ENTER (CUIs) or choose the "Select..." button (GUIs). See also Applying the Use Selection List Option.
From Library	The name of the library where the DDMs are located. Only to be used in OpenVMS, UNIX and Windows environments. If the Use Selection List option is set, you can invoke a selection list of all available libraries: Press PF1 (OpenVMS, UNIX) or open a selection box (Windows).
To Library	The name of the library into which the DDMs are to be loaded. Only to be used if your target environment is OpenVMS, UNIX or Windows. If no library is specified, the following applies: ● If the DDMs are unloaded from a mainframe environment, all DDMs will be automatically loaded into the library SYSTEM. ● If the DDMs are unloaded from any other environment, the name of the library specified as From Library will be used. ● If the target environment is a mainframe environment, any specification is ignored.

Options for the DDM Selection List

See also the section Applying the Use Selection List Option.

In this selection list, you can limit the DDMs displayed by specifying the following items:

Option	Explanation
DDM Name DDM Range (GUIs)	A single name or a range of names of DDMs to be listed. See Name and Range Specification in the section Introduction. Additionally, you can use a wildcard (?) within the object name or within the asterisk (*) range.
DBID	The database ID of the DDMs to be listed. If you wish to list only DDMs which have a specific database ID (1), enter that database ID in this field.
FNR	The file number of the DDMs to be listed. If you wish to list only DDMs which have a file number (1), enter that file number in this field. (1) These are the database ID and file number of the physical database file of which the DDM is the logical representation.

Unloading Adabas FDTs

If you select Adabas FDT as the type of objects to be unloaded, you can make the following specifications:

Source DBID	The database ID of the Adabas FDT you want to unload.
Source FNR	The file number of the Adabas FDT you want to unload.
Target DBID	The database ID to be used by the target system for the Adabas FDT. If you enter a **0**, the Source DBID specification applies.
Target FNR	The file number to be used by the target system for the Adabas FDT. If you enter a **0**, the Source FNR specification applies.
Adabas Password for Source FDT	The appropriate password if your Adabas FDT is password-protected.
Adabas Cipher Code for Source FDT	The appropriate cipher code if your Adabas FDT is protected by a cipher code.

Unloading Error Message Texts

If you select Error Message Texts as the type of objects to be unloaded, you can make the following specifications:

Message Type	The type of error messages to be unloaded: **CUIs** **GUIs** U User User-defined error messages N System Natural error messages
From Library	The name of the library where the messages are located (only to be used with user-defined error messages). If the Use Selection List option is set, you can invoke a selection list of all available libraries: Press ENTER (CUIs) or open a selection box (GUIs).
Message Number	The range of error message numbers to be unloaded.
Language Code	The language code of the error messages to be unloaded. If you specify an asterisk (*), all language codes are unloaded. For valid codes, see the description of the system variable *LANGUAGE in the Natural Programming Reference documentation
To Library	The name of the library into which the messages are to be loaded (only to be used with user messages). If no library is specified, the name specified as From Library is used.

Note:
For Natural error messages, you need not specify a library, because they are always unloaded from either the FNAT system file or the error messages subdirectory.

Unloading Command Processors

If you select Command Processors as the type of objects to be unloaded, you can make the following specifications:

S/C Type	For future use; nothing can be specified at the moment.
From Library	The name of the library where the command processors are located. If the Use Selection List option is set, you can invoke a selection list of all available libraries: Press PF1 (CUIs) or open a selection box (GUIs) and select the library.
Command Processor Name	The name of the command processor to be unloaded. See also Name and Range Specification in the section Introduction. The Command Processor Name field does not appear in CUI environments if the Use Selection List option is set. To display a selection list of all command processors contained in the specified library: Press ENTER (CUIs) or choose the "Select..." button (GUIs). See also Applying the Use Selection List Option.
To Library	The name of the library into which the command processors are to be loaded. If no library is specified, the name specified as From Library is used.

Options for the Command Processor Selection List

See also the section Applying the Use Selection List Option.

In this selection list, you can limit the command processors displayed by specifying the following items:

Option	**Explanation**
Member Command Processor Range (GUIs)	A single name or a range of names of command processors to be listed. See Name and Range Specification in the section Introduction. Additionally, you can use a wildcard (?) within the object name or within the asterisk (*) range.

Unloading Libraries

If you select Library as the type of objects of various types to be unloaded from a specific library, you can make the following specifications:

CUIs	GUIs	Explanation
From Library	Library	The name of the library to be unloaded. If the Use Selection List option is set, you can invoke a selection list of all available libraries: Press ENTER (CUIs) or open a selection box (GUIs).
Unload Natural Objects	Natural Objects	Indicates whether the Natural objects contained in the specified library are to be unloaded. Enter a Y for yes (CUIs) or select the corresponding option (GUIs) to unload Natural objects.
Range of Natural Objects	Name Range	The name of the object to be unloaded. See also Name and Range Specification in the section Introduction.
Types of Natural Objects	Types	The type(s) of the object(s) to be unloaded. If you specify an asterisk (*), all types are unloaded.
Unload Maps	Maps	Enter a Y (CUIs) or select the corresponding option (GUIs) to unload maps.
Range of Maps	Name Range	The name of the map to be unloaded. See also Name and Range Specification in the section Introduction.
Unload DDMs	DDMs	Indicates whether the DDMs contained in the specified library are to be unloaded on OpenVMS, UNIX and Windows, or in the FDIC system file on mainframes. Enter a Y (CUIs) or select the corresponding option (GUIs) to unload DDMs.
Range of DDMs	DDM Range	The name of the DDM to be unloaded. See also Name and Range Specification in the section Introduction.
Unload Error Messages	Error Message Texts	Enter a Y (CUIs) or select the corresponding option (GUIs) to unload error messages.
Message Number	Number from . . . to	The range of error message numbers to be unloaded.
Language Code	Language Code	The language code of the error messages to be unloaded. If you specify an asterisk (*), all language codes are unloaded. For valid codes, see the system variable *LANGUAGE in the Natural Programming Reference documentation.
Unload Command Processors	Command Processors	Enter a Y (CUIs) or select the corresponding option (GUIs) to unload command processors.
Range of Command Processors	Range	The name of the command processor to be unloaded. See also Name and Range Specification in the section Introduction.
To Library	To Library	The name of the library into which the objects are to be loaded. If no library is specified, the name specified under From Library is used.

Unloading in Batch Mode under OS/390

The following example shows a JCL procedure which you can use to unload your programs and maps:

```
//************************************************
//*
//*   UNLOAD Natural SOURCES
//*
//************************************************
//TRANSFER  JOB CLASS=G,MSGCLASS=X
//NATBAT  EXEC PGM=NATBAT,REGION=3000K,
          PARM='IM=D,INTENS=1'
//STEPLIB  DD DISP=SHR,DSN=NATURAL.LOAD
//         DD DISP=SHR,DSN=ADABAS.LOAD
//CMPRINT  DD SYSOUT=X
//DDCARD   DD  *
ADARUN PROG=USER,DB=10,MODE=MULTI,SVC=249
//CMWKF01  DD DISP=SHR,DSN=WORK.FILE1
//CMWKF03  DD DISP=SHR,DSN=WORK.FILE3
//CMSYNIN  DD  *
SYSTRANS
U
N,N,N,Y,N,N,N,N
N
LIB1,*,*,LIB2
M
SRCLIB,*,Y,N,TARLIB
FIN
/*
```

Note:
As shown in the above example, do not specify the S/C Type field when unloading Natural objects, because the S/C Type field is an output field only.

Unloading in Batch Mode under OpenVMS

The following example shows a DCL procedure which you can use to unload your Natural objects (besides maps and DDMs):

```
$  ON ERROR THEN GOTO _error_exit
$  natb := $NATBIN:NATURAL.EXE
$
$  work_dir := mydevice:[mydirectory]
$
$  DEFINE NATOUTPUT  SYS$OUTPUT               ! Will be written to the log file
$!
$! Assuming that in the parameter module mytrans, the Work Files 1-4 were
$! assigned to NATWORK01-4
$!
$  DEFINE NATWORK01  'work_dir'natwork01.dat
$  DEFINE NATWORK03  'work_dir'natwork03.dat
$  DEFINE NATWORK04  'work_dir'natwork04.dat
$
$ natb batch parm=mytrans stack=(TRANSCMD U N WHERE NAME * FR LIB1 TO LIB2)
$
$_error_exit:
$  EXIT
```

Unloading in Batch Mode under UNIX

The following example shows a UNIX batch procedure which you can use to unload your Natural objects (besides maps and DDMs), assuming that in the parameter module mytrans, the Work Files 1, 3 and 4 were assigned to the names of your work files:

```
natb batch parm = mytrans stack = "(TRANSCMD U N WHERE NAME * FR LIB1 TO LIB2)"
```

User Exits for Unloading in Batch Mode

Two user exits with which you can handle errors when unloading in batch mode are provided in source form under the names SUL-S-X1 and SUL-S-X2. To be invoked, both must be available as cataloged objects under the names SULEXIT1 and SULEXIT2 in the library SYSTRANS.

SULEXIT1 is invoked if an error occurs that leads to an abnormal termination. It allows you to define a return code.

SULEXIT2 is invoked in the case of error messages or warnings. If it returns a non-zero return code, the unload operation is abnormally terminated; otherwise processing is continued.

Unload Work File Specifications

The following work files are used for unloading:

Work File 1	The file into which the data are unloaded; this work file is always used on OpenVMS, UNIX and Windows. On mainframe computers, this file is only used if the option Use Entire Connection Work File (see General Unload Options) is not specified.
Work File 2	The file which contains the unload commands if you use the use the option Use Work File Input as described under General Unload Options.
Work File 3	The file used for temporary storage while unloading; this work file is only used if the option Use Selection List is set. See also Applying the Use Selection List Option.
Work File 4	The file into which the data are unloaded temporarily when using the Direct Transfer Functions (see the relevant section).
Work File 7	**Not applicable to Windows.** The file (in Entire Connection format) into which the data are downloaded when specifying the option Use Entire Connection Work File (see General Unload Options).

Mainframe

Use the following JCL parameter values to specify the work files:

Parameter	Work File 1/4	Work File 2	Work File 3
LRECL	96	80	43
RECFM	VB	FB	FB
BLKSIZE	6240	6240	6450

Note:
Since SYSTRANS writes records with a variable length, Work File 1 should be defined with the RECFM value VB to reduce work file size.

OpenVMS, UNIX and Windows

All work files must be of ASCII format. To achieve this, a file extension must be used, but not the file extension ".sag".

Work File for Unload Command Input - Work File 2

Unload commands for command input from Work File 2 can be specified in either of the following ways:

- by specifying the individual parameters at fixed positions,
- by specifying the individual parameters separated by a comma (,).

In both ways, the sequence in which the parameters are specified is the same. The way to be used is determined by the second byte which can be specified as either a blank (for fixed positions) or a comma.

Fixed Parameter Positions

Bytes	Explanation
01 - 01	Object Type: N = Natural object M = Map D = DDM F = Adabas FDT E = Error Message Asterisk notation (*) = comment line
02 - 02	Blank

Bytes	Explanation
03 - 34	Object identification **Object = N/M:** 03 - 10 Object name or (*); this position is mandatory. **Object = D:** 03 - 34 Object name or (*); this position is mandatory. **Object = E:** 03 - 06 Start error message number; this position is mandatory. 07 - 07 Blank 08 - 11 End error message number or blank. 12 - 12 Blank 13 - 20 Language code, blank or (*); blank = default = (*). **Object = F:** 03 - 07 Source DBID; this position is mandatory. 08 - 08 Blank 09 - 13 Source FNR; this position is mandatory. 14 - 14 Blank 15 - 19 Target DBID or blank; blank = Source DBID. 20 - 20 Blank 21 - 25 Target FNR or blank; blank = Source FNR.
35 - 35	Blank
36 - 43	From Library; this position is mandatory if the object = N/M/D/E (exceptions: D on mainframes and E only if error message type = U or blank).
44 - 44	Blank
45 - 52	To Library or blank, if the object = N/M/D/E; blank = From Library. E only if error message type = U or blank.
53 - 53	Blank

Bytes	Explanation
54 - 70	Additional parameters **Object = N:** 54 - 68 Object type list, blank or (*); blank = default = (*). **Object = M:** 54 - 54 Y (Yes), N (No) or blank: Incorporate Predict Rules; blank = default = N. 55 - 55 Blank 56 - 56 Y (Yes), N (No) or blank: Unload associated Free Rules; blank = default = N. **Object = F:** 54 - 61 Adabas password 62 - 62 Blank 63 - 70 Adabas cipher code **Object = E:** 54 - 54 N (No), U (User-defined) or blank: error message type; blank = default = U.

Example:

```
N PRGMNAME                          FROMLIBR TOLIBRRY PNSGLAT
M MAPMNAME                          FROMLIBR TOLIBRRY N N
D DDMNAME890123456789012345678901 2 FROMLIBR TOLIBRRY
E 1234 5678 12345678                FROMLIBR TOLIBRRY U
F 12345 12345 12345 12345                            ADAPASSW 12345678
```

Parameters Separated by a Comma

When specifying parameters separated by a comma, the following rules apply:

- The parameters must be separated by a comma (,).
- Blank characters between parameters are not required.
- The sequence of the parameters must be as with fixed positions.
- If a parameter is omitted, a comma (,) must be specified instead.

Example:

```
N,PRGMNAME,FROMLIBR,TOLIBRRY,PNSGLAT
M,MAPMNAME,FROMLIBR,TOLIBRRY,N,N
D,DDMNAME890123456789012345678901 2,FROMLIBR,TOLIBRRY
E,1234,5678,12345678,FROMLIBR,TOLIBRRY,U
F,12345,12345,,,ADABASPW,12345678
```

Natural Profile Parameters

To be able to use the Unload function, set the following Natural parameters:

Parameter	Mainframe	OpenVMS	UNIX	Windows
MT	0	0	---	---
MADIO	0	0	0	0
MAXCL	0	0	0	0
ESIZE	64	---	---	---

